



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/891,784	06/25/2001	Emanuel Beer	10732-0009-999	1504

32588 7590 04/16/2003

APPLIED MATERIALS, INC.
2881 SCOTT BLVD. M/S 2061
SANTA CLARA, CA 95050

EXAMINER

MOORE, KARLA A

ART UNIT	PAPER NUMBER
----------	--------------

1763

10

DATE MAILED: 04/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/891,784

Applicant(s)

BEER ET AL.

Examiner

Karla Moore

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 5-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 5-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Art Unit: 1763

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2, 5-6, 12 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,286,296 to Sato et al. in view of U.S. Patent No. 4,997,364 to McGrath et al.
3. Sato et al. disclose the invention substantially as claimed in Figure 1 and comprising: an apparatus through which a substrate is transferred between a first vacuum chamber (3B) and a second vacuum chamber (1), wherein the first vacuum chamber is maintained at a high temperature (column 7, rows 31-38) relative to a temperature maintained within said second vacuum chamber, said second vacuum chamber including a port (opened or closed by gate valve, 2); said apparatus comprising a passageway for receiving said substrate (not numbered); and a thermally isolating interface (2) that reduces heat transfer from said first said first vacuum chamber to said second vacuum chamber (when closed) ; said thermally isolating interface allowing transfer (when open) of said substrate between said first vacuum chamber and said second vacuum chamber and wherein said first vacuum chamber, said apparatus and said second vacuum chamber are sealed together to form a closed environment having an internal pressure that is less than standard atmospheric pressure.
4. With respect to claim 2, said first chamber is a heat chamber and said second chamber is a transfer chamber (column 4, rows 17-25).
5. With respect to claim 12, said high temperature range is in a range between about 250 deg C and 625 deg C (column 7, rows 31-38).
6. With respect to claim 19, said substrate is a semiconductor substrate or a glass substrate (column 1, rows 8-9).

Art Unit: 1763

7. However, Sato et al. fails to teach said thermally isolating interface having a face with a border disposed on said face, the border defining a hole in said thermally isolating interface having dimensions such that said substrate is transferable through said thermally isolating interface; wherein said thermally isolating interface is made of a metal having a thermal conductivity coefficient of less than 1536 Btu inch/(hr)(ft²)(deg F).

8. McGrath et al. teach the use of a thermally isolating interface (baffle gate chamber, column 1, rows 47-55) for the purpose of permitting a carefully controlled atmosphere and a precise temperature profile to be established in a heating chamber. The interface (Figure 1, 14) comprises a border (facing heating chamber, 12) with a hole having dimensions such that said substrate is transferable through said thermally isolating interface. Further, said thermally isolating interface is made of a stainless steel which is a metal having a thermal conductivity coefficient of less than 1536 Btu inch/(hr)(ft²)(deg F) and specifically about 106 Btu inch/(hr)(ft²)(deg F).

9. It would have been obvious to one of ordinary skill in the art at the time the Applicant's was made to have provided a thermally isolating interface in Sato et al. in order to permit a carefully controlled atmosphere and a precise temperature profile to be established in a heating chamber as taught by McGrath et al.

10. Claims 7-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. and McGrath et al. as applied to claims 1-2, 5-6, 12 and 20 above, and further in view of U.S. Patent No. 3,866,926 to Traum.

11. Sakamoto et al. disclose the invention substantially as claimed and as described above.

12. However, Sakamoto fail to teach the face of the apparatus including a recess such that when said face abuts said port, a thermally isolating volume is defined within said recess. Nor, do Sakamoto et al. teach said thermally isolated volume occupied by a air, which has a thermal conductivity coefficient of less than 1200 Btu inch/(hr)(ft²)(deg F) or a cross section of said recess defined by a shape selected from the group consisting of sawtooth pattern, a repeating pattern, a curve and a polynomial equation.

Art Unit: 1763

13. Examiner notes that claim does not recite said recess has a cross sectional area with any of the shapes above, rather that the cross section is defined by any of the shapes above.

14. Traum teaches providing recesses (Figure 2, 22-25, second recess means) in a thermal isolating interface and occupying the volume created with air for the purpose of defining heat insulating cavities between two members (abstract and column 3, rows 16-24). Additionally, each of the recess cross sections is defined by a curve (see Figure 2).

15. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided recesses with an air occupying volume and a cross section defined by a curve in Sakamoto et al. in order to define heat insulating cavities as taught by Traum.

16. Claims 13, 16 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. and McGrath et al. as applied to claims 1-2, 5-6, 12 and 20 above, and further in view of U.S. Patent No. 5,980,991 to Sakamoto et al.

17. However, the prior art fails to teach said passageway further comprises a heating element for maintaining said apparatus at a temperature that is proximate said high temperature.

18. Sakamoto et al. teach the use of heating elements within a thermally isolating interface (gradually cooling zone) for the purpose of gradually cooling a substrate (column 19, rows 5-6 and column 22, rows 20-24). Further said passageway further comprises a heat distribution mechanism, air, for distributing heat generated by said heating element.

19. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a heating element in the prior art in order to maintain said apparatus at a temperature proximate a high temperature and heat distribution mechanism in order to distribute the heat produced as taught by Sakamoto et al.

20. Claims 14-15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al., McGrath et al. and Sakamoto et al. as applied to claims 13, 16 and 21 above, and further in view of U.S. Patent No. 4,531,047 to Canfield et al.

Art Unit: 1763

21. Sakamoto et al. disclose the invention substantially as claimed and as described above.

22. However, Sakamoto fail to teach the heating element in said passageway comprising a heater in a metal shape or comprising a coil wrapped around a ceramic base.

23. Canfield et al. disclose a heating element comprising a heater in a metal shape (12) for the purpose of mounting the heater; a coil (5) wrapped about a ceramic base (6a) for the purpose of supporting the coil (column 2, rows 53-59); and a reflective parabolic surface (Figure 6) for the purpose of distributing heat generated by said heating element (column 2, rows 53-59).

24. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided any of the following in Sakamoto et al.: a heating element in a metal shape in order to mount the heater or a heating coil wrapped about a ceramic base in order to support the heating coil or a heating element with a reflective surface, as taught by Canfield et al.

25. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al., McGrath et al., Sakamoto et al. and Canfield et al. as applied to claims 14-15 and 17 above, and further in view of Japanese Patent No. 01-082453 to Okubo et al.

26. Sakamoto et al. and Canfield et al. disclose the invention substantially as claimed and as described above.

27. However, the prior art fails to specifically disclose the reflecting surface as a mirror.

28. Okubo teaches the use of a reflecting parabolic mirror for the purpose of reflecting heat energy thereby improving lamp efficiency (purpose and constitution).

29. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a reflecting parabolic mirror in the prior art in order to reflect heat energy thereby improving lamp efficiency as taught by Okubo.

Art Unit: 1763

Allowable Subject Matter

30. Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

31. The following is a statement of reasons for the indication of allowable subject matter: the prior art does not teach nor does it fairly suggest the recess of said apparatus as being **beveled**.

Response to Arguments

32. The claim objections, 112 second paragraph rejection and 102 rejections of the previous office action are withdrawn.

33. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

34. In response to applicant's argument that Traum is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, both the claimed invention and the invention of Traum are concerned with providing a heat-isolating interface to minimize heat transfer between two bodies.

35. In response to applicant's argument that the mirror in Okubo has a different purpose, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Art Unit: 1763

Conclusion

36. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

37. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 703.305.3142. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703.308.1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703.872.9310 for regular communications and 703.872.9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0661.

km
April 10, 2003


BENJAMIN L. UTECH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700